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Working paper

Fissile material[1] types potentially relevant to FMCT verification[2]

[1] Aims to cover all of the main proposed fissile material definitions.

[2] Prepared by Mr. John Quinn, Ambassador of Australia to the Conference on Disarmament and Mr. Malcolm Coxhead, Director, Australian Safeguards and Non-Proliferation Office, Nuclear Non-Proliferation Section, Department of Foreign Affairs and Trade.

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	Risk to FMCT	*Value added to FMCT by verification of non-diversion*	*Verification challenge*	*Main facilities to be verified*
LEU in bulk forms such as UF6, UO2	Risk for undeclared enrichment	"light" verification would be of value	methodologies available	enrichment, conversion and fuel fabrication facilities
LEU in non-bulk forms	Low risk for undeclared enrichment	low	methodologies available	fuel fabrication facilities and nuclear reactors
unseparated Pu, U-233 in irradiated fuel	Risk for undeclared reprocessing	"light" verification would be of value for fast breeder blanket fuel, otherwise low value	methodologies available[3] but for dry storage are challenging	nuclear reactors and off-site stores
separated plutonium, HEU and U-233 in bulk forms	Moderate to high risk for use in weapons	high	methodologies available, new managed access approaches may be needed for some facilities2	enrichment and reprocessing facilities, some fuel fabrication facilities
HEU, U-233 and plutonium in unirradiated fuels	Moderate risk for use in weapons	moderate	methodologies available2	some conversion and fuel fabrication facilities, some nuclear reactor sites
separated Np, Am	Low to moderate risk for use in weapons	moderate	available methodologies may be adapted	reprocessing plants
small quantities of fissile material used for isotope production or in research	Low risk for use in weapons	low	methodologies available	isotope production facilities, R&D laboratories, locations outside facilities
fabricated unirradiated LEU naval fuel	Low risk for undeclared enrichment	low	necessary methodologies not yet developed, significant managed access issues need to be addressed	Small in number
HEU for naval fuel in bulk forms	Moderate to high risk for use in weapons	moderate-high	available methodologies may be adapted, but significant managed access issues need to be addressed	small in number

[3] Measurement techniques for U-233 need to be developed.

	Risk to FMCT	*Value added to FMCT by verification of non-diversion*	*Verification challenge*	*Main facilities to be verified*
fabricated unirradiated HEU naval fuel	Moderate risk for use in weapons	moderate	necessary methodologies not yet developed, significant managed access issues need to be addressed	small in number
'excess' fissile material in weapons forms	High risk for use in weapons	high	necessary methodologies not yet developed, significant managed access issues need to be addressed, proliferation-sensitive information must be protected	small in number

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